

Walter Coe P.E.

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WORK EXPERIENCE

Payson Labs – Murrieta, CA

2022-Current

Principal Engineer

- Work part time as a Mechanical Engineering Consultant to develop early engineering concepts, functional prototypes, production jigs, and production parts
- Responsible for all aspects of mechanical design and part production including design, modeling and drawing in SolidWorks, managing schedules, suppliers, and assembly processes
- Projects range from electro-optical sensors, radar units, highly dynamic servo trackers, and tooling jigs
- Part fabrication methods include sheet fabrication, CNC turning and milling, welding and tubular fabrication, injection molding – all with various surface finishes and marking
- Perform structural, thermal, and other required analysis using both hand calcs, custom calculators and simulations, as well as commercial FEA to verify design
- Design residential fire sprinkler systems in accordance with NFPA 13D and local codes

L3Harris Technologies - Carlsbad, CA

2023-Current

Senior Specialist Mechanical Engineer - Mechanisms

- Develop custom machines for internal and external customers related to communication industry
- Perform structural, thermal, and other required analysis using both hand calcs, custom calculators and simulations, as well as commercial FEA to verify design
- Perform design primarily in PTC Creo, with reports and analysis in MS office products
- Maintain TS Clearance

Fluidra - Carlsbad, CA

2020-2023

Mechanical Engineer II, III, IV - Automatic Pool Cleaners

- Lead embedded-C firmware developer for automatic pool cleaning robots including custom motor control, orientation estimation, user interface, diagnostics, battery management, and behavior turning
- Design and modify robot components and assemblies in SolidWorks for injection molding and machining in mass production consumer products
- Collaborate with suppliers to develop and refine electro-mechanical subsystems specifications, including electric motors, batteries, connectors, harnesses, and displays
- Serve as the Electrical Design-Review Lead for the mechanical engineering team
- Instrumental in increasing motor and pump testing capability through motor dyno and pump test stand development
- Author and review testing methodology for in-house robot prototype development production line quality assurance
- Work continually with compliance team and third-party labs to verify safety compliance of robotic cleaners
- Prototype and test concepts with in-house 3D printing and manual machining

General Atomics – San Diego, CA

2019-2020

Mechanical Engineer III - Laser/Advanced Sensors

- Develop and test control algorithms for Fast Steering Mirrors in both Simulink and C/C++
- Design actuated mechanisms for laser weapon systems from the inception of system level requirements and analysis to detailed solid modeling and component selection

Raytheon Missile Systems – Tucson, AZ

2016-2019

Systems Engineer I, II - Actuator Control Systems

- Promoted ahead of schedule after achieving top performance reviews in consecutive years
- Worked with actuator mechanical design team to determine early mechanism concepts including motors, sensors, and torque/velocity ratio selections
- Performed system level evaluations of early concepts including preliminary performance analysis and trade studies while flowing information and recommendations back to mechanical design team

- Developed control algorithms and high-fidelity physics-based model in MATLAB/Simulink for control surface and thrust vectoring actuators consisting primarily of three-phase brushless or brushed DC motors in combination with linked, geared, or screw-based mechanisms
- Led teams of ~5 engineers through testing of actuation systems and subassemblies (motors, gearboxes, electronics, algorithms, etc.) for both modeling and design verification purposes
- Worked with actuator customer (typically autopilot team) to develop actuation system requirements (CIDS) using performance-based models implemented in a variety of programming languages
- REA for actuator test equipment rack mechanical and system design and vendor management
- Developed analysis in MATLAB for optimizing thermos-chemical battery models, predicting brushed and brushless motor performance, and analyzing duty cycle requirements with respect to system capability

Action Target Inc – Provo, UT

2014-2016

Mechatronics Engineer

- Lead inventor for patented closed loop lead collection system, including control and monitoring sub-system, mechanical structures, electrical circuitry, and software development

Brigham Young University – Provo, UT

2013-2016

Mechatronics Teaching Assistant

Machinist

- Taught two lab sections on prototyping mobile and autonomous robotic
- Worked as a manual machinist running a mill and lathe supporting Faculty Research on campus

Novatek Inc – Provo, UT

2013-2014

Student Engineer, Junior Engineer

- Designed and built a Microcontroller based wireless robot for hazardous environment data acquisition using CREO Parametric and C++

EDUCATION

Bachelor of Science - Mechanical Engineering

Brigham Young University

Multibody Dynamics Analysis with Adams Certificate

MSC Training

ACHIEVEMENTS

- Professional Engineer – Mechanical, California License: #41107
- NCEES Principals and Practice of Engineering Exam: Passed (November 2021)
- **US Patent #10,418,685** – *Flexed Perimeter Roller Antenna Positioner*
- **US Patent #10,240,903** – *Projectile Collection System*
- Awarded “Up and Coming 2018” at Raytheon Missile Systems
- Co-founded and served as Vice President of the Mechatronics Club at BYU (2014 – 2016)
- Won *Best Engineering Design* at BYU’s annual Nephi’s Steel Bow competition (2009)

SKILLS

Proficient

- SolidWorks, PTC Creo, Actuator Development, Tolerance Analysis, Electro-Mechanical packaging and testing, Mobile Robotics, Design for Manufacturing, Test and Assembly Planning, Motion Planning, Mechanism Synthesis, Structural Analysis

Experienced

- Programming (Python, C/C++, MATLAB/Simulink), PCB Design/Assembly, 6-DOF Dynamic Simulation, Industrial Automation/Safety, Autopilot